

CLAIMS

1. A carrier for introduction of a substance into
5 cells, comprising a major capsid protein L1 of human
papillomavirus (HPV-L1 protein) which has been inten-
tionally modified to remove major type-specific
epitope(s) causing production of neutralising antibodies.
2. A carrier according to claim 1, wherein one or
10 more amino acids have been deleted.
3. A carrier according to claim 1, wherein said HPV-
L1 protein is in fusion with a peptide.
4. A carrier according to claim 3, wherein said
peptide comprises one or more T-cell epitopes.
- 15 5. A carrier according to claim 4, wherein said one
or more T-cell epitopes are derived from a group of
antigens comprising tumor, bacterial, parasite, viral or
auto-antigens.
6. A carrier according to claim 3, wherein said
20 peptide comprises one or more antibody epitopes.
7. A carrier according to claim 6, wherein said one
or more antibody epitopes are derived from a group of
antigens comprising tumor, bacterial, parasite, viral or
auto-antigens.
- 25 8. A carrier according to claim 7, wherein said one
or more antibody epitopes are derived from human papillo-
mavirus antigens.
9. A carrier according any one of claims 6-8,
capable of giving rise to a protective antibody response.
- 30 10. A carrier according to claim 9, wherein said
protective antibody response is cross-reactive towards
two or more serologically defined subtypes of human
papillomaviruses.
11. A carrier according to claim 10, wherein said
35 protective responses is raised against two or more of the
group comprising HPV-L1 proteins derived from human
papillomavirus implicated in tumor induction.

2004016-012800

Sub
C1

12. A carrier according to claim 11, wherein said protective antibody response is cross-reactive towards two or more of the group of HPV-L1 proteins comprising L1 proteins of HPV-16, HPV-18, HPV-31 and HPV-45.

5. 13. A carrier according to any one of claims 1-12 in combination with a minor capsid protein L2 of human papillomavirus (HPV-L2 protein).

10 14. A carrier according to claim 13, wherein said HPV-L2 protein is in fusion with one or more further peptides.

15 15. A carrier according to claim 14, wherein said one or more further peptides are chosen from a group of antigens comprising tumor, bacterial, parasite, viral and auto-antigens.

16. A carrier according to any one of claims 1-15, in which said substance is an oligo- or polynucleotide.

17. A carrier according to claim 16, whereby said oligo- or polynucleotide is coding for one or more antigens or immunostimulatory (poly)peptides.

20 18. A vaccine, comprising as an active ingredient a carrier as defined in any one of claims 1-17.

19. A polynucleotide coding for the carrier as defined in any one of claims 1-17.

25 20. A vaccine, comprising as an active ingredient a polynucleotide as defined in claim 19.

30 21. A method of preventing or treating viral, bacterial or parasite infections by vaccination with a carrier as defined in any one of claims 1-17.

22. A method according claim 21 of preventing or treating infection of human papillomavirus.

35 23. A method of preventing or treating development of benign or malign consequences of human papillomavirus infection by vaccination with a carrier as defined in any one of claims 1-17.

24. A method according to claim 23, whereby said human papillomavirus infection is chosen from the group comprising warts and laryngeal papillomatosis.

Sub
a1

25. A method of preventing or treating cancer by vaccination with a carrier as defined in any one of claims 1-17.

26. A method according to claim 25, whereby said cancer is chosen from the group comprising cancer of cervix, penis, vulva, vagina, anus and orofarynx.

all

10042016-012200